
人工智能工具安装说明

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1 L^AT_EX安装

注意：不论在什么系统环境下，我们都可以通过浏览器进入L^AT_EX在线编译网站<https://www.sharelatex.com>和<https://www.overleaf.com>生成pdf文件，这是目前最方便快捷的方式。目前两网站已经合并，可通过<https://v2.overleaf.com>进入,该网站需要注册帐户，如图1。

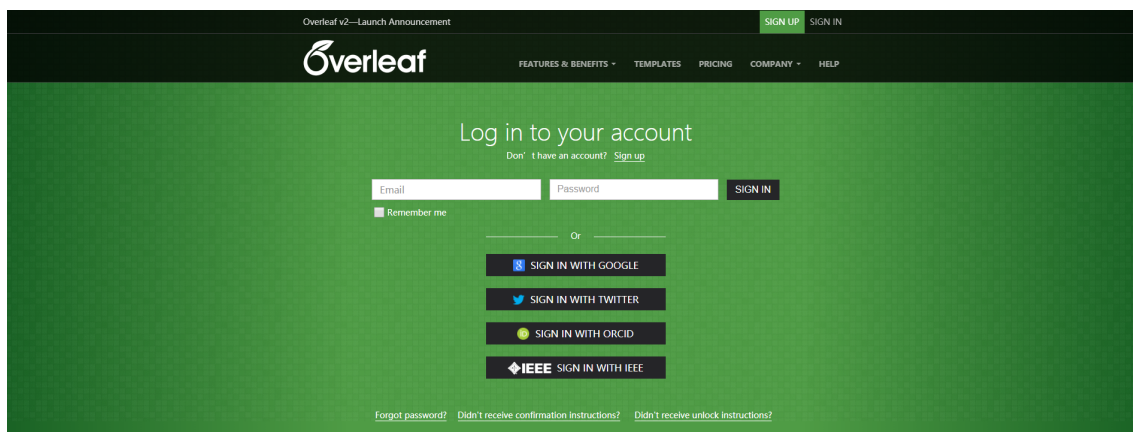


图 1: Overleaf网站

1.1 Linux平台

1. 选择合适的软件源，如图2和图3：

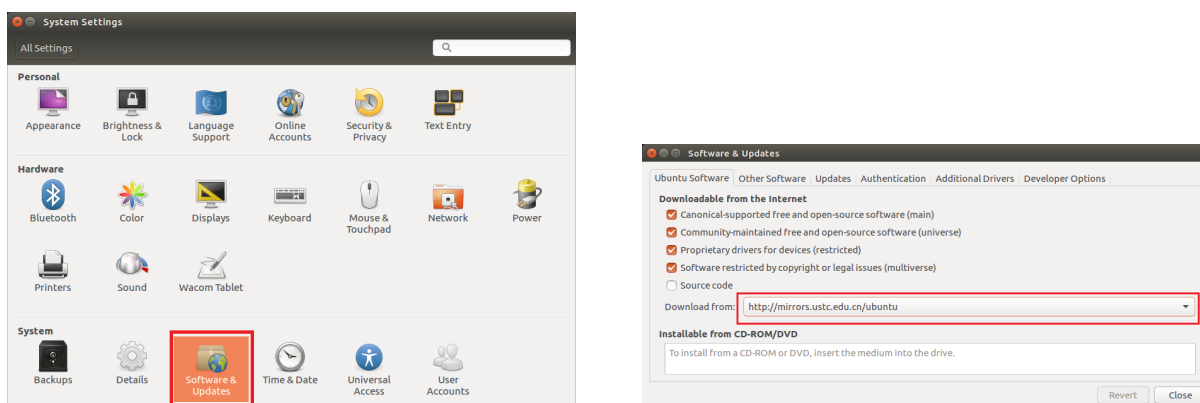


图 2: 找到软件源更改处

2. 更新软件源：`sudo apt-get update`
3. 安装texlive：`sudo apt-get install texlive`
(也可以安装texlive完整版本，命令为`sudo apt-get install texlive-full`)
4. 安装L^AT_EX文本编辑器：`sudo apt-get install texstudio` (也可使用其他编辑器，请参照<https://www.zhihu.com/question/19954023>)

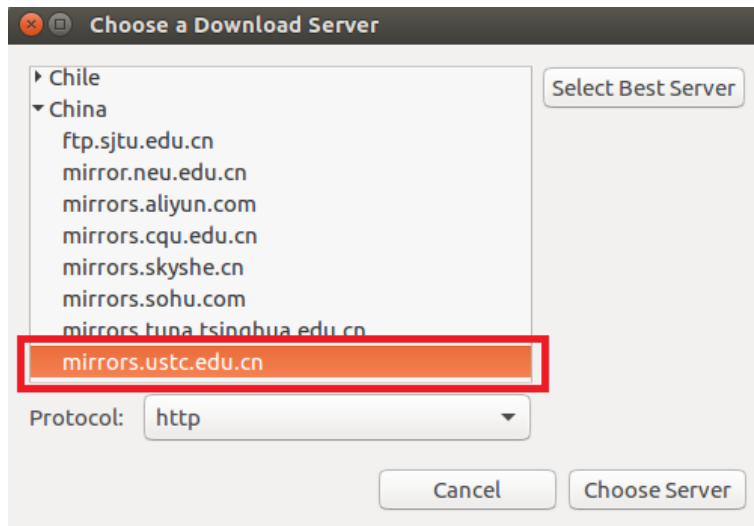


图 3: 选择中国科技大学软件源

1.2 Windows平台

1. 进入网站<http://www.ctex.org/HomePage>，下载CTEX套装并点击exe文件安装，以百度网盘下载为例，如图4和图5。



图 4: 下载安装CTEX

2. 安装成功后，打开程序自带的WinEdit工具编辑代码，编译即可生成相应的pdf文件，如图6。

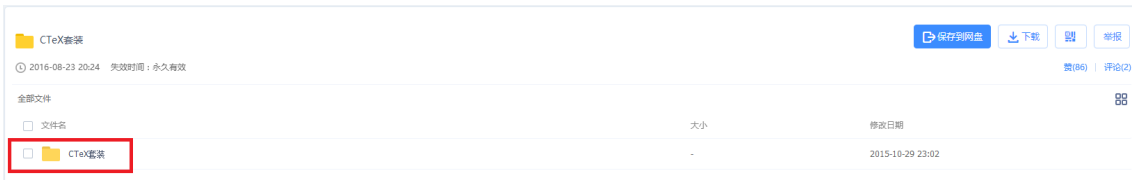


图 5: 百度网盘下载CTEX

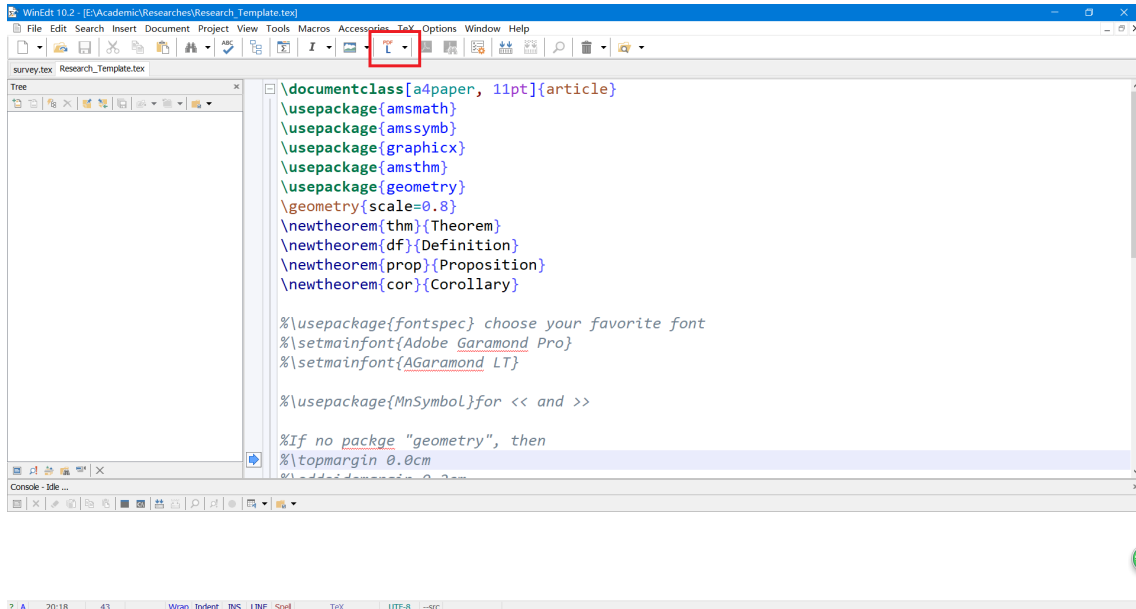


图 6: WinEdit界面（注：可下载安装高版本WinEdit，替换低版本WinEdit）

2 FF规划器

2.1 Linux平台

1. 进入FF规划器主页<http://fai.cs.uni-saarland.de/hoffmann/ff.html>，下载FF源码，如图7。

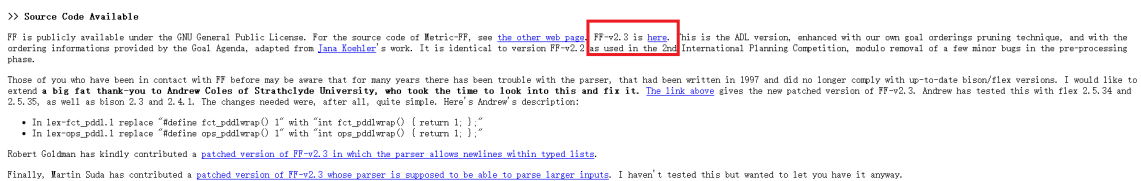


图 7: 下载FF源文件

2. 对下载好的FF源文件FF-v2.3.tgz进行编译，文件解压缩，进入文件目录下，使用命令make即可生成可执行文件ff，如果提示缺少库文件，可以使用命令sudo apt-get install xxx进行安装，其中xxx为缺少的库名。安装过程如图8，生成可执行文件ff如图9。

```
al2017@osboxes:~$ cd Documents/FF-v2.3/
al2017@osboxes:~/Documents/FF-v2.3$ make
flex -Pfft_pddl lex-fct_pddl.l
make: flex: Command not found
makefile:84: recipe for target 'lex-fct_pddl.c' failed
make: *** [lex-fct_pddl.c] Error 127
al2017@osboxes:~/Documents/FF-v2.3$ sudo apt-get install flex
[sudo] password for al2017:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libfl-dev libsigsegv2 m4
Suggested packages:
  bison
The following NEW packages will be installed:
  flex libfl-dev libsigsegv2 m4
0 upgraded, 4 newly installed, 0 to remove and 3 not upgraded.
Need to get 511 kB of archives.
After this operation, 1,390 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 libsigsegv2 amd64 2.10-4 [14.1 kB]
Get:2 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 m4 amd64 1.4.17-5 [195 kB]
Get:3 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 libfl-dev amd64 2.6.0-11 [12.5 kB]
Get:4 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 flex amd64 2.6.0-11 [290 kB]
Fetched 511 kB in 0s (1,209 kB/s)
Selecting previously unselected package libsigsegv2:amd64.
(Reading database ... 194956 files and directories currently installed.)
Preparing to unpack .../libsigsegv2_2.10-4_amd64.deb ...
Unpacking libsigsegv2:amd64 (2.10-4) ...
Selecting previously unselected package m4.
Preparing to unpack .../archives/m4_1.4.17-5_amd64.deb ...
Unpacking m4 (1.4.17-5) ...
Selecting previously unselected package libfl-dev:amd64.
Preparing to unpack .../libfl-dev_2.6.0-11_amd64.deb ...
Unpacking libfl-dev:amd64 (2.6.0-11) ...
Selecting previously unselected package flex.
Preparing to unpack .../flex_2.6.0-11_amd64.deb ...
Unpacking flex (2.6.0-11) ...
Processing triggers for install-info (6.1.0.dfsg.1-5) ...
Processing triggers for man-db (2.7.5-1) ...
Processing triggers for libc-bin (2.23-0ubuntu9) ...
Processing 1 added doc-base file...
Setting up libsigsegv2:amd64 (2.10-4) ...
Setting up m4 (1.4.17-5) ...
Setting up libfl-dev:amd64 (2.6.0-11) ...
Setting up flex (2.6.0-11) ...
Processing triggers for libc-bin (2.23-0ubuntu9) ...
al2017@osboxes:~/Documents/FF-v2.3$

al2017@osboxes:~/Documents/FF-v2.3$ make
flex -Pfft_pddl lex-fct_pddl.l
bison -Pfft_pddl -bscan-fct_pddl scan-fct_pddl.y
make: bison: Command not found
makefile:78: recipe for target 'scan-fct_pddl.tab.c' failed
make: *** [scan-fct_pddl.tab.c] Error 127
al2017@osboxes:~/Documents/FF-v2.3$ sudo apt-get install bison
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libbison-dev
Suggested packages:
  bison-doc
The following NEW packages will be installed:
  bison libbison-dev
0 upgraded, 2 newly installed, 0 to remove and 3 not upgraded.
Need to get 597 kB of archives.
After this operation, 1,795 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 libbison-dev amd64 2:3.0.4.dfsg-1 [338 kB]
Get:2 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 bison amd64 2:3.0.4.dfsg-1 [259 kB]
Fetched 597 kB in 0s (1,437 kB/s)
Selecting previously unselected package libbison-dev:amd64.
(Reading database ... 195110 files and directories currently installed.)
Preparing to unpack .../libbison-dev_2:3.0.4.dfsg-1_amd64.deb ...
Unpacking libbison-dev:amd64 (2:3.0.4.dfsg-1) ...
Selecting previously unselected package bison.
Preparing to unpack .../bison_2:3.0.4.dfsg-1_amd64.deb ...
Unpacking bison (2:3.0.4.dfsg-1) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up libbison-dev:amd64 (2:3.0.4.dfsg-1) ...
Setting up bison (2:3.0.4.dfsg-1) ...
update-alternatives: using /usr/bin/bison.yacc to provide /usr/bin/yacc (yacc) in auto mode
al2017@osboxes:~/Documents/FF-v2.3$

al2017@osboxes:~/Documents/FF-v2.3$ make
bison -Pfft_pddl -bscan-fct_pddl scan-fct_pddl.y
scan-fct_pddl.y: warning: 1 shift/reduce conflict [-Wconflicts-sr]
gcc -c -Wall -g -std=gnu99 -O6 scan-fct_pddl.tab.c
scan-fct_pddl.tab.c: In function 'fct_pddlparse':
scan-fct_pddl.tab.c:64:25: warning: implicit declaration of function 'fct_pddllex' [-Wimplicit-function-declaration]
#define yylex          fct_pddllex
                          ^
scan-fct_pddl.tab.c:1319:16: note: in expansion of macro 'yylex'
    yychar = yylex ();
                   ^
scan-fct_pddl.y:156:3: warning: implicit declaration of function 'fcterr' [-Wimplicit-function-declaration]
    fcterr( PROBNAM_EXPECTED, NULL );
    ^
scan-fct_pddl.tab.c:65:25: warning: implicit declaration of function 'fct_pddlerror' [-Wimplicit-function-declaration]
#define yyerror          fct_pddlerror
                          ^
scan-fct_pddl.y:184:5: note: in expansion of macro 'yyerror'
    yyerror();
    ^
In file included from scan-fct_pddl.y:582:0:
lex-fct_pddl.c: At top level:
lex-fct_pddl.c:661:12: warning: prototype for 'fct_pddlwrap' follows non-prototype definition
extern int fct_pddlwrap (void );
               ^
scan-fct_pddl.y:593:6: warning: conflicting types for 'fcterr'
void fcterr( int errno, char *par ) {
    ^
scan-fct_pddl.y:156:3: note: previous implicit declaration of 'fcterr' was here
    fcterr( PROBNAM_EXPECTED, NULL );
    ^
```

图 8: ubuntu下ff生成过程

(也可以直接下载可执行文件, 可能需要以下配置, 如提升权限: `sudo chmod 777 xxx`, 安装32位文件运行库: `sudo apt-get install ia32-libs`)

3. 使用: 在ff文件同目录下运行 `./ff -o domain.pddl -f data.pddl`。

也可以将ff复制到/etc/bin下, 命令为 `sudo cp ff /etc/bin`, 运行ff时只需在命令行中输入 `ff -o domain.pddl -f data.pddl`。

3 Prolog编程语言

3.1 Linux平台

安装说明可参照<http://www.swi-prolog.org/build/unix.html>, 推荐安装步骤如下:

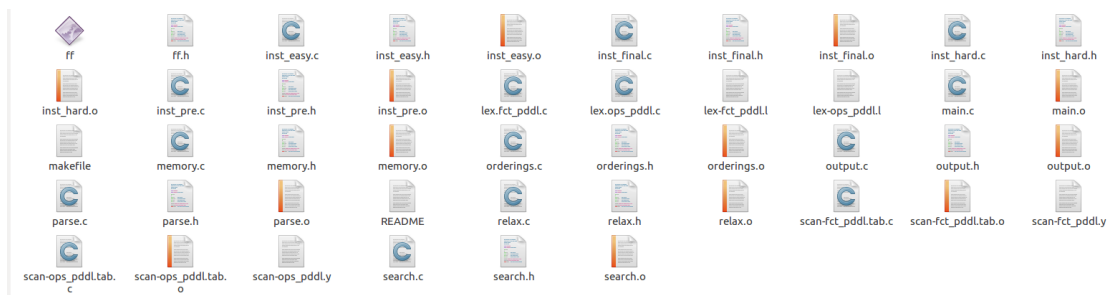


图 9: 生成可执行文件ff

1. 预先安装git, curl和autoconf必备工具: `sudo apt-get install git curl autoconf`
2. `git clone https://github.com/SWI-Prolog/swipl-devel.git`
3. `cd swipl-devel`
4. `./prepare`
5. `make`
6. `sudo make install`

安装过程如图11, 图12和图13。运行Prolog程序如图10。

3.2 Windows平台

1. 浏览Swi-Prolog主页<http://www.swi-prolog.org/>, 进入下载页面, 如图14, 选择合适版本下载。
2. 执行exe文件后安装swi-prolog, 安装成功后找到安装目录下bin文件夹里的swipl.exe和swipl-win.exe, 点击运行可打开操作界面, 如图15, 使用consult()函数查询prolog代码。执行prolog命令结束时切记要加句号”.”。

4 机器学习工具

通常使用Python, 其中Python编程语言可运行在多台平台下, 学习Python编程语言可通过入门网站<https://www.liaoxuefeng.com/wiki/001374738125095c955c1e6d8bb493182103fac9270762a000>学习。对于机器学习工具, 通常使用GitHub开源工具包, 因本学期研究的机器学习算法可能不同于2016和2017学年, 故不再提前安装机器学习工具包, 需要用到时再安装。

5 注意事项

1. 该中文文档在Windows下平台下生成, 但在Linux下系统下, 由于Linux默认字体为开源字体, 而无宋体、黑体等中文字体, 故需要配置相应中文字体, 才能编译成功。

```
administrator@vinzor: ~/Documents/Prolog
File Edit View Search Terminal Help
administrator@vinzor:~$ cd Documents/Prolog/
administrator@vinzor:~/Documents/Prolog$ swipl
Welcome to SWI-Prolog (threaded, 64 bits, version 7.5.14)
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.
Please run ?- license. for legal details.

For online help and background, visit http://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

1 ?- consult('hanoi.pl').
true.

2 ?- hanoi(3).

from a to c
from a to b
from c to b
from a to c
from b to a
from b to c
from a to c
true
```

图 10: Swi-Prolog运行程序

2. 关于人工智能工具学习文档已在QQ群共享中提供给大家，大家可自行学习，也可在工具主页下载相应的Documentation进行学习。对于工具安装和工具学习有疑问，可联系TA。

```

ai2017@osboxes: ~/swipl-devel
ai2017@osboxes:~$ git clone https://github.com/SWI-Prolog/swipl-devel.git
The program 'git' is currently not installed. You can install it by typing:
sudo apt install git
ai2017@osboxes:~$ sudo apt-get install git
[sudo] password for ai2017:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
git-man liberror-perl
Suggested packages:
git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk gitweb git-arch git-cvs git-mediawiki git-svn
The following NEW packages will be installed:
git git-man liberror-perl
0 upgraded, 3 newly installed, 0 to remove and 3 not upgraded.
Need to get 3,918 kB of archives.
After this operation, 25.6 MB of additional disk space will be used.

```

```

ai2017@osboxes: ~/swipl-devel
ai2017@osboxes:~$ curl
The program 'curl' is currently not installed. You can install it by typing:
sudo apt install curl
ai2017@osboxes:~$ sudo apt-get install curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
curl
0 upgraded, 1 newly installed, 0 to remove and 3 not upgraded.
Need to get 139 kB of archives.
After this operation, 338 kB of additional disk space will be used.
Get:1 http://mirrors.ustc.edu.cn/ubuntu xential-updates/main amd64 curl amd64 7.47.0-1ubuntu2.2 [139 kB]
Fetched 139 kB in 0s (665 kB/s)
Selecting previously unselected package curl.
(Reading database ... 231751 files and directories currently installed.)
Preparing to unpack .../curl_7.47.0-1ubuntu2.2_and64.deb ...
Unpacking curl (7.47.0-1ubuntu2.2) ...

```

```

ai2017@osboxes: ~/swipl-devel
WARNING: Please install autoconf and re-run this script.
./configure: 77: ./configure: ./src/configure: not found
ai2017@osboxes:~/swipl-devel$ autoconf
The program 'autoconf' is currently not installed. You can install it by typing:
sudo apt install autoconf
ai2017@osboxes:~/swipl-devel$ sudo apt install autoconf
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
autoconf-archive autoconf-doc libtool
Suggested packages:
autoconf-archive gnu-stardards autoconf-doc libtool
The following NEW packages will be installed:
autoconf autoconf-archive autoconf-doc libtool
0 upgraded, 3 newly installed, 0 to remove and 3 not upgraded.
Need to get 871 kB of archives.
After this operation, 3,589 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://mirrors.ustc.edu.cn/ubuntu xential/main amd64 auto

```

图 11: 安装Swi-Prolog其一

```

ai2017@osboxes: ~/swipl-devel
Setting up git (1:2.7.4-0ubuntu1.2) ...
ai2017@osboxes:~$ git clone https://github.com/SWI-Prolog/swipl-devel.git
Cloning into 'swipl-devel' ...
remote: Counting objects: 175386, done.
remote: Compressing objects: 100% (91/91), done.
Receiving objects: 0% (1231/175386), 180.01 KiB | 274.00 KiB/s
Receiving objects: 1% (1754/175386), 180.01 KiB | 274.00 KiB/s
Receiving objects: 2% (3508/175386), 548.01 KiB | 309.00 KiB/s
Receiving objects: 2% (5160/175386), 548.01 KiB | 309.00 KiB/s
Receiving objects: 3% (5262/175386), 548.01 KiB | 309.00 KiB/s
Receiving objects: 4% (7016/175386), 1.25 MiB | 452.00 KiB/s
Receiving objects: 4% (7692/175386), 1.25 MiB | 452.00 KiB/s
Receiving objects: 5% (8770/175386), 1.55 MiB | 474.00 KiB/s
Receiving objects: 5% (9909/175386), 1.76 MiB | 460.00 KiB/s
Receiving objects: 6% (10524/175386), 1.76 MiB | 460.00 KiB/s
Receiving objects: 6% (11875/175386), 2.21 MiB | 450.00 KiB/s
Receiving objects: 7% (12278/175386), 2.21 MiB | 450.00 KiB/s
Receiving objects: 8% (14031/175386), 2.40 MiB | 468.00 KiB/s
Receiving objects: 8% (14680/175386), 2.62 MiB | 447.00 KiB/s
Receiving objects: 9% (15785/175386), 2.80 MiB | 491.00 KiB/s
Receiving objects: 9% (16187/175386), 2.86 MiB | 491.00 KiB/s

```

```

ai2017@osboxes: ~/swipl-devel
ai2017@osboxes:~/swipl-devel$ ./prepare
The following submodules are not yet initialised
bench
packages/BDT
packages/RTD
packages/archiver
packages/bdb
packages/chr
packages/clib
packages/clpqr
packages/cpp
packages/cql
packages/http
packages/linclpr
packages/jpl
packages/libedit
packages/nlp
packages/odbc
packages/pcrc
packages/pengines
packages/pldoc
packages/plunit

```

```

ai2017@osboxes: ~/swipl-devel
ai2017@osboxes:~/swipl-devel$ ls
bench demo Makefile README.mingw
boot doc-version Makefile.in ReleaseNotes
build templ gen-files man scripts
configure INSTALL packages src
customize library prepare swipl.home
debian LICENSE README.md VERSION
ai2017@osboxes:~/swipl-devel$ ./configure
All submodules are up-to-date.
Generating configure in /src ... done
Generating configure in packages/bdb ... done
Generating configure in packages/RDF ... done
Generating configure in packages/xpcc/src ... done
Generating configure in packages/protobuffs ... done
Generating configure in packages/zlib ... done
Generating configure in packages/clpqr ... done
Generating configure in packages/pldoc ... done
Generating configure in packages/pengines ... done
Generating configure in packages/senweb ... done
Generating configure in packages/chr ... done
Generating configure in packages/table ... done
Generating configure in packages/http ... done

```

图 12: 安装Swi-Prolog其二

```

ai2017@osboxes: ~/swipl-devel
**
* Now type the following to make and install the basic environment
*
* % make
* % make install
*
* To complete the environment, goto the packages directory and check
* the README file for further instructions.
*****
ai2017@osboxes:~/swipl-devel$ make
make[1]: Entering directory '/home/ai2017/swipl-devel/src'
*****
Making SWI-Prolog 7.5.14 for x86_64-linux
To be installed in /usr/local/bin/swipl
Home (libraries) in /usr/local/lib/swipl-7.5.14
*****
No GIT version change
gcc -c -I. -I. -I./rc -Wall -O2 -fno-strict-aliasing -pthread

```

```

ai2017@osboxes: ~/swipl-devel
-I. -I. -Wall -O2 -fno-strict-aliasing -pthread -fPIC
-o swipl-ld ./swipl-ld.c
make[1]: Leaving directory '/home/ai2017/swipl-devel/src'
ai2017@osboxes:~/swipl-devel$ make install
make[1]: Entering directory '/home/ai2017/swipl-devel/src'
if [ ! -d /usr/local/lib ]; then mkdir -p /usr/local/lib; fi
if [ ! -d /usr/local/lib/swipl-7.5.14 ]; then mkdir -p /usr/local/lib/swipl-7.5.14; fi
mkdir: cannot create directory '/usr/local/lib/swipl-7.5.14': Permission denied
Makefile:537: recipe for target 'idirs' failed
make[1]: *** [idirs] Error 1
make[1]: Leaving directory '/home/ai2017/swipl-devel/src'
Makefile:25: recipe for target 'install-lite' failed
make: *** [install-lite] Error 2
ai2017@osboxes:~/swipl-devel$ sudo make install
make[1]: Entering directory '/home/ai2017/swipl-devel/src'
if [ ! -d /usr/local/lib ]; then mkdir -p /usr/local/lib; fi
if [ ! -d /usr/local/lib/swipl-7.5.14 ]; then mkdir -p /usr/local/lib/swipl-7.5.14; fi
for d in bin bin/x86_64-linux lib lib/x86_64-linux boot demo c
customize include include/sicstus include/Yap library library/c

```

图 13: 安装Swi-Prolog其三

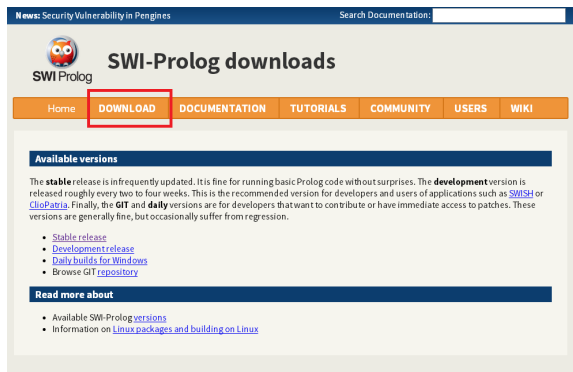


图 14: Swi-Prolog下载界面

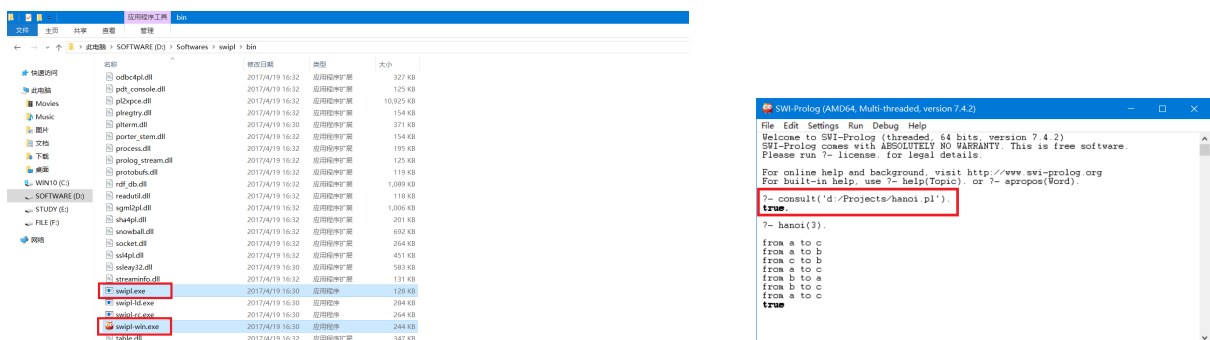


图 15: Swi-Prolog安装及运行